Site Investigation Report Addendum (2)
Town of Tiverton
Tiverton, Rhode Island

Prepared for

Town of Tiverton
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CONTENTS

1. INTRODUCTION

This Site Investigation Report (SIR) Addendum (2) has been prepared in accordance with Section 7.0 of the Rhode Island Department of Environmental Management (RIDEM) "Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases," or "Remediation Regulations" (March 1993, amended August 1996). EA Engineering, Science, and Technology, Inc. (EA) has prepared this addendum on behalf of the Town of Tiverton, Rhode Island to supplement the SIR prepared by EA in March 2003 and the SIR Addendum prepared by EA in October 2003. The purpose of this site investigation is to further investigate the extent of soil contamination discovered during the Site Investigation conducted over the period of October 2002 – October 2003. This phase of an ongoing investigation has two objectives: to determine whether or not contamination exists beneath portions of Lepes Road, Church Street, Borden Street, Sission Avenue, and Judson Street, all Town of Tiverton-owned roadways included in a moratorium prohibiting excavations, and to complete follow-up surface soil sampling at the previously investigated Bay View Recreation Area (Plat 8-6, Block 3, Lot 2), a town-owned property on Hooper Road.

Figure 1 is a site locus for the study area. Figure 2 is a site plan showing all boring locations in the Bay View Recreation Area. Figure 3 is a detailed site plan including all roadway soil boring locations. Appendix A includes the Certificates of Analysis for the Bay View Recreation Area. Appendix B contains the soil boring logs for the roadway borings. Appendix C contains the Certificates of Analysis from the roadway borings. The Soil Management Plan for the area is included as Appendix D.

2. DESCRIPTION OF RELEASE, SITE CONDITIONS, AND RECEPTORS

A description of the release, site conditions, and surrounding receptors is provided below.

2.1 SITE DESCRIPTION

The study area is an approximately 46-acre parcel located within 0.25 mi of the Sakonnet River/ Mount Hope Bay in Tiverton, Rhode Island. Topography is characterized by a steep slope towards the west, flattening out towards the shore. There are no significant surface water bodies located within the study area, although there is a stream draining to Hooper Street from the east. Locations of subsurface investigation included the Bay View Recreation Area and the following Town of Tiverton public roadways: Judson Street, Church Street, Borden Street, Sission Avenue, and Lepes Road.

Surrounding land usage is predominantly residential, with commercial/residential usage to the north at Bay Street and State Avenue and to the east along Main Road. Commercial businesses in this area include a fuel terminal and fuel distribution company. The Fall River Wastewater Treatment Facility is located less than 0.25 mi to the north on Bay Street. Inactive, former Conrail tracks run north-south along the entire length of the study area, approximately 50 ft to the west of Bay Street.

The depth to groundwater was found to be variable over the site. The direction of groundwater flow is assumed to be west by northwest based upon surface topography. No barriers to groundwater flow are known at the site. Soil at the site is characterized as urban fill overlying coastal sand deposits. Merrimac-Urban land complex and Udorthents-Urban land complex cover the site area, but the study area was expected to contain more urban fill, as all boring locations, with the exception of the Bay View Recreation Area, were on paved roadways. Bedrock at the site is characterized as Sachuest Arkose, a sandstone and conglomerate interbedded with phyllite.

2.2 SITE HISTORY

Information was gathered regarding the site history during a review of historical aerial photographs from 1939 to 1995 at the Rhode Island Statewide Planning Office. Land use in the area of Bay Street in North Tiverton was primarily agricultural in 1939, and residential development was already in place along Bay Street and its side streets, including those investigated during this site investigation phase. The Bay View Primary School was present at this time in the current Bay View Recreation Area lot. The school was reportedly destroyed by fire in the late 1960s, a fact that is supported by its presence on the 1962 aerial photograph and absence on the 1972 aerial photograph. By 1972, the land use had switched to predominantly residential, with the exception of land along Judson Street that remained open space, developed only with paths at this time. These lots were not developed until the 1992 aerial photograph, when the Bay View Recreation Area was also present, with the current basketball court and baseball diamond visible.

Of the roads included in this phase of the site investigation, only Judson Street was present as a paved road in the 1951 aerial photograph. By 1962, Church Street, Borden Street, Sission Avenue, and the eastern portion of Lepes Road (to approximately 200 ft west of Sission Avenue) were paved and developed roadways. Lepes Road was developed gradually from the 1962 to 1981 aerial photographs, and was completely paved and developed with residential lots by the 1992 aerial photograph.

2.3 SURROUNDING RECEPTORS

The study area is bounded to the north by residential/commercial development, including the Fall River Wastewater Treatment Facility, to the east of residential development and commercial development along Main Road, to the south by an area by residential development, and to the west by the Rhode Island Department of Transportation Rail right-of-way, followed by undeveloped land and the Mount Hope Bay/Sakonnet River. Between Judson Street and Lepes Road is an undeveloped parcel of land. Although area groundwater is zoned as GA/GAA, defined as suitable for use as drinking water without treatment, all residences in the immediate vicinity of the site are served by Town water. There are no Wellhead Protection Areas located within 500 ft of the site.

2.4 DESCRIPTION OF RELEASE

During excavation of soils along Bay Street in August 2002 for the Mount Hope Bay Sewer Interceptor Project, contamination was discovered in the form of petroleum-impacted soils. The odor of petroleum and a sheen on groundwater were observed. Soils from this area were designated as unsuitable for backfill due to structural concerns and were transported to two temporary staging areas on Kaufman and Last Streets. A Notification of Release for these locations was filed with RIDEM on 2 October 2002, and an Emergency and Short-Term Response Action was completed to address these releases from September through November 2002.

A site investigation was conducted by EA between October 2002 and February 2003. The first stage of this investigation, in October 2002, was to install soil borings along the proposed path of the Mount Hope Bay Sewer Interceptor Project along Bay Street and Foote Street. Borings were also installed at 100 and 200 ft from the Bay Street intersection and Judson, Hooper, Canonicus, and Hilton Streets and Chace Avenue. This round of subsurface investigation discovered semivolatile organic compounds (SVOCs), particularly polycyclic aromatic hydrocarbons (PAHs), and cyanide at levels exceeding both the RIDEM Residential and Industrial/Commercial Direct Exposure Criteria (RDEC and I/CDEC). The RIDEM RDEC and I/CDEC were exceeded at Judson-2, Bay-5, and Hilton-1 for several analytes. Figure 3 identifies all the subsurface investigation locations on the roadways.

A follow-up phase of the Site Investigation was conducted in November 2002 to try to locate the eastern extent of the subsurface contamination on Judson and Hilton Streets, as well as to investigate Chace Avenue, for which utilities were not marked for the first phase of the investigation. Three borings were advanced on Chace Avenue at 100-ft intervals from the

Bay Street intersection. The first two soil borings, at 100 ft and 200 ft east of the Bay Street/Chace Avenue intersection, indicated the presence of contamination through screening results, and a soil sample from the third soil boring, 300 ft east of the Bay Street/Chace Avenue intersection, was sent for laboratory analysis. No exceedances of the RIDEM RDEC were detected at Chace-3. Although no visual or olfactory evidence of contamination was observed at Hilton-2 (100 ft east of Hilton-1 from the previous phase), the RDEC was exceeded in soils at this location for benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene, all PAHs. Judson-8, advanced a total of 600 ft east of Judson-2, contained concentrations of benzo(a)pyrene and chrysene exceeding the RIDEM RDEC.

In December 2002, the site investigation was expanded to include the areas east of Hilton-2 and Judson-8 to find the extent of the contaminated material. Judson-9, 100 ft east of Judson-8, did not contain any analytes at concentrations exceeding the RIDEM RDEC. Borings were advanced east on Hilton Street and the soil screening results indicated the presence of the fill material extending to the intersection of Bottom Street. A soil sample collected from Hilton-7 contained benzo(a)pyrene at a concentration just exceeding the RIDEM RDEC, at 0.405 parts per million. However, visual evidence suggested a thinning of this layer as the investigation continued in a easterly direction.

Since the submittal of the SIR in March 2003, anecdotal evidence has been found to link this contamination to historic dumping of manufactured gas plant waste material by the former Fall River Gas Company. Chemical profiles of the contaminated soil and organic material are consistent with this suspected source. Extensive filling reportedly occurred when the Town of Tiverton established the easternmost reaches of Judson Street, in the area of the Bay Street/Judson Street intersection. The Bay View Primary School was located on the current Bay View Recreation Area from prior to 1939 until it was destroyed by fire in the late 1960s. Some material found in soil borings at the recreation area are consistent with debris from this building.

The Site Investigation conducted by EA discovered soil contamination under Town of Tiverton-owned roadways above RIDEM Industrial/Commercial Direct Exposure Criteria (I/C DEC) for total cyanide and PAHs. In some locations, particularly along Judson Street, a layer of highly contaminated wood mulch was observed in the soil borings. Follow-up investigations discovered contaminated soils at Bottom Street, A Connell Street, State Avenue, Chace Avenue, and Canonicus Street. In response to soil analyses conducted by EA, the Town of Tiverton established a moratorium on excavation soil activities extending from State Avenue to Lepes Road, and from Bay Street to Church Street. This phase of the site investigation addresses the southern extent of the area included in the excavation activity moratorium.

3. INVESTIGATION GOALS

This investigation was conducted on Town of Tiverton property to assess the impacts to their property as well as potential impact to private property. Based upon the results of the prior SIR Addendum, a moratorium was established prohibiting any soil excavations (except those done on an emergency response basis) in the area south of State Avenue to Lepes Road and east from Bay Street to Church Street. At the conclusion of this site investigation phase, all Town-owned property included in this moratorium will have been investigated.

This investigation also completed surface soil sampling in the Bay View Recreation Area. Arsenic in particular has been discovered within soils on this property, and further investigation has provided adequate sampling coverage to determine whether the site is in compliance with RIDEM standards and, therefore, safe for recreational use.

4. SUBSURFACE INVESTIGATION

4.1 BAY VIEW RECREATION AREA

4.1.1 29 and 30 April 2003 Soil Sampling

In April 2003, a subsurface investigation of the Bay View Recreation Area was conducted by EA. This investigation consisted of the advancement of 18 soil borings to 12 ft below ground surface using a Geoprobe. Soils were screened using a flame ionization detector, and soils exhibiting visual, olfactory, or screening indications of contamination were submitted for laboratory analysis. Three locations exhibited potential contamination based upon screening results (BVRC-5, 6, and 9) at levels below 2 ft below ground surface and were submitted for laboratory analysis. Seven surface soil samples (BVRC-1, 3, 7, 11, 14, 16, and 18) were also submitted for laboratory analysis based upon spatial coverage. Soil samples were collected in clean 8-oz glass jars and clean 40-mL vials, preserved with methanol, and all samples were kept under 4°C pending submittal to a certified analytical laboratory. The 10 soil samples were analyzed for SVOCs analysis by U.S. Environmental Protection Agency (EPA) Method 8270, Total Cyanide analysis by EPA Method 9010, Priority Pollutant (PP13) Metals by EPA Methods 6010/7471, and volatile organic compounds (VOCs) by EPA Method 8260B/5035. A trip blank was also submitted for laboratory analysis of VOCs to assess any travel-related cross contamination. The results from this first round of sampling at the Bay View Recreation Area are summarized in the table below.

ANALYTICAL RESULTS FOR 29 AND 30 APRIL 2003 SOIL SAMPLING ACTIVITIES

Analyte Detected (ppm)	BVRC1 (0-2 ft)	BVRC3 (0-2 ft)	BVRC5 (10-12 ft)	BVRC6 (2-4 ft)	BVRC7 (0-2 ft)	BVRC9 (5-7 ft)	BVRC11 (0-2 ft)	BVRC14 (0-2 ft)	BVRC16 (0-2 ft)	BVRC18 (0-2 ft)	RIDEM RDEC
Cyanide	ND	ND	ND	8.9	ND	ND	9.2	ND	ND	ND	200
Arsenic	2.92	4.64	2.25	4.88	3.41	2.27	6.36	4.96	**10.3**	3.88	7.0
Beryllium	0.197	0.304	0.261	**0.827**	**0.420**	0.307	**0.439**	0.321	**0.460**	0.301	0.4
Chromium	6.1	6.96	2.22	4.18	7.57	3.65	9.06	8.45	8.92	9.91	1,790
Copper	10.3	16.9	6.66	27.4	4.73	9.19	17.8	2.02	11.9	11.7	3,100
Lead	ND	84.1	11.6	**257**	ND	8.53	99	12.8	65.6	12.8	150
Mercury	ND	0.115	ND	0.343	ND	ND	1.01	0.124	0.292	0.037	23
Nickel	11.5	6.56	3.44	8.6	4.89	4.57	7.06	5.33	7.55	11.3	1,000
Zinc	23.2	190	10.2	28.1	18.9	12.4	51.4	21.6	43.7	42	6,000
2-Methylnaphthalene	ND	ND	ND	0.189J	ND	ND	ND	ND	0.069J	ND	123
Acenaphthene	ND	ND	ND	0.046J	ND	ND	ND	ND	0.025J	ND	43
Acenaphthylene	ND	ND	ND	0.179J	ND	ND	0.146J	ND	ND	0.040J	23
Anthracene	ND	ND	ND	0.385J	ND	ND	0.069J	ND	ND	ND	35
Benzo(a)anthracene	ND	0.110J	ND	**1.310**	ND	ND	0.255J	ND	0.106J	0.097J	0.9
Benzo(a)pyrene	ND	0.142J	ND	**1.610**	ND	ND	0.279J	ND	0.114J	0.131J	0.4
Benzo(b)fluoranthene	ND	0.129J	ND	**1.870**	ND	ND	0.273J	ND	0.103J	0.112J	0.9
Benzo(g,h,i)perylene	ND	0.109J	ND	**1.000**	ND	ND	0.199J	ND	0.070J	0.176J	0.8
Benzo(k)fluoranthene	ND	0.136J	ND	**1.200**	ND	ND	0.269J	ND	0.119J	ND	0.9
Chrysene	ND	0.136J	ND	**1.440**	ND	ND	0.305J	ND	0.160J	0.113J	0.4
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	0.056J	ND	ND	0.031J	0.4
Fluoranthene	ND	0.203J	ND	1.390	ND	ND	0.332J	ND	0.243J	0.275J	20
Fluorene	ND	ND	ND	0.097J	ND	ND	ND	ND	ND	ND	28
Indeno(1,2,3-cd)pyrene	ND	0.093J	ND	0.885	ND	ND	0.155J	ND	0.057J	0.088J	0.9
Naphthalene	ND	ND	ND	0.256J	ND	ND	0.044J	ND	0.186J	ND	54
Phenanthrene	ND	0.069J	ND	1.360	ND	ND	0.206J	ND	0.125J	0.101J	40
Pyrene	ND	0.183J	ND	4.900	ND	ND	0.427	ND	0.217J	0.306J	12

NOTE: **Bold** indicates an exceedance of the Rhode Island Department of Environmental Management (RIDEM) Residential Direct Exposure Criteria (RDEC).
J = Detected below the Method Detection Limit; estimated value.
ND = Not detected.

4.1.2 26 November 2003 Soil Sampling

At the request of town residents, a second round of soil sampling was conducted at the Bay View Recreation Area on 26 November 2003. This sampling event was conducted with a hand auger and limited to the surficial 2 ft of soil across the playground. The soil samples were collected from the upper 2 ft of the soil column in close proximity to the previous boring locations. To fulfill both Remediation Regulation requirements and public safety concerns, 6 soil samples were collected from the 0-6 in. interval and 5 were collected from the 0-24 in. interval. Soil samples were collected in clean 8-oz glass jars and clean 40-mL vials preserved with methanol, and all samples were kept under 4°C pending submittal to a certified analytical laboratory. The 11 soil samples were analyzed for SVOC analysis by EPA Method 8270, Total Cyanide analysis by EPA Method 9010, Priority Pollutant (PP13) Metals by EPA Methods 6010/7471, and VOCs by EPA Method 8260B/5035. A trip blank was also submitted for laboratory analysis of VOCs to assess any contamination. The results of all detected analytes are summarized in the table below.

ANALYTICAL RESULTS FOR 26 NOVEMBER 2003 SOIL SAMPLING ACTIVITIES

Analyte Detected (ppm)	BVRC2 (0-24 in)	BVRC4 (0-6 in)	BVRC5 (0-6 in)	BVRC6 (0-6 in)	BVRC8 (0-6 in)	BVRC9 (0-6 in)	BVRC10 (0-24 in)	BVRC12 (0-6 in)	BVRC13 (0-24 in)	BVRC15 (0-24 in)	BVRC17 (0-24 in)	RIDEM RDEC
Arsenic	3.53	6.49	2.01	0.740	6.84	4.84	4.51	4.91	5.22	6.76	3.14	7.0
Beryllium	0.293	0.311	0.190	0.128	0.354	0.278	0.276	0.325	0.281	0.230	0.327	0.4
Chromium	8.29	10.5	48.0	48.2	8.14	22.1	7.33	7.00	7.02	6.84	8.42	1,790
Copper	7.20	9.91	34.5	25.1	8.35	14.5	4.81	10.3	6.21	10.4	2.41	3,100
Lead	14.9	37.4	16.3	7.07	28.8	27.7	18.0	54.4	29.2	24.8	11.5	150
Mercury	1.45	0.323	0.036	ND	1.97	0.282	0.161	0.219	0.185	1.64	0.088	23
Nickel	6.07	6.96	23.3	27.2	5.87	12.0	5.17	6.09	5.54	5.39	6.21	1,000
Zinc	32.4	30.1	43.8	30.4	29.8	34.5	21.0	43.2	23.5	40.2	23.3	6,000
Acenaphthylene	ND	0.022 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	23
Benzo(a)anthracene	ND	0.088 J	ND	ND	ND	0.046 J	ND	0.152 J	0.033 J	0.070 J	ND	0.9
Benzo(a)pyrene	ND	0.071 J	ND	ND	ND	0.048 J	ND	0.156 J	ND	0.071 J	ND	0.4
Benzo(b)fluoranthene	ND	0.047 J	ND	ND	ND	0.046 J	ND	0.143 J	ND	0.054 J	ND	0.9
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	0.100 J	ND	0.045 J	ND	0.8
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	0.176 J	ND	ND	ND	0.9
Chrysene	ND	0.100 J	ND	ND	ND	0.053 J	ND	0.226 J	ND	0.080 J	ND	0.4
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	0.090 J	ND	ND	ND	ND	ND	0.4
Fluoranthene	ND	0.121 J	ND	ND	ND	ND	ND	0.380 J	0.059 J	0.131 J	ND	20
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	0.089 J	ND	ND	ND	0.9
Phenanthrene	ND	ND	ND	ND	ND	0.041 J	ND	0.228 J	ND	0.061 J	ND	40
Pyrene	ND	0.162 J	ND	ND	ND	0.077 J	ND	0.365 J	0.051 J	0.112 J	ND	12
2-Butanone	0.191 J,B	ND	0.148 J,B	ND	0.222 J,B	0.154 J,B	ND	0.273 J,B	0.165 J	0.211 J,B	0.219 J,B	--
Tetrahydrofuran	ND	ND	ND	ND	ND	ND	ND	0.053 J,B	ND	0.039 J,B	ND	--

NOTE: B = Analyte also present in Trip Blank.
J = Detected below the Method Detection Limit; estimated value.
ND = Not detected.
-- = No standard established for this analyte.

No analytes were detected in the second round of sampling at levels exceeding the RIDEM RDEC. Total cyanide was not detected in any of these samples. Complete Certificates of Analysis for the 26 November 2003 Bay View Recreation Area soil samples are included as Appendix A.

4.2 ROADWAY INVESTIGATION – 21 and 24 NOVEMBER 2003

On 21 and 24 November 2003, an additional roadway investigation was performed on the following streets: Judson Street (between the Bay View Recreation Area and Church Street), Church Street, Borden Street, Sission Avenue, and Lepes Road. Prior to the subsurface investigation, all locations were cleared for utilities by calling DigSafe. Judson Street had previously been investigated with soil borings at the Bay Street (western) end during the prior phase of this site investigation, and this phase extended boring installations from approximately 1,000 ft east of the Bay/Judson Street intersection east to the intersection of Church/Judson Street.

Soil borings were advanced in the center of the roadways to 8 ft below ground surface using a truck-mounted Geoprobe 5400. Locations were established every 100 ft in order to provide a consistent means of coverage throughout the area. Soils were logged and screened in 4-ft long,

2-in. diameter acetate sleeves using visual/olfactory observations and a flame ionization detector. Boring logs are included as Appendix B.

A soil sample was submitted for total arsenic/lead analysis for every 200 ft. A total of 20 soil samples were submitted for As/Pb analysis by EPA Method 6010. The results of the As/Pb analyses are summarized in the table below.

ROADWAY SOIL BORING ARSENIC/LEAD ANALYTICAL RESULTS
21 AND 24 NOVEMBER 2003

Concentration (ppm)	Judson 12	Judson 14	Church 1	Church 3	Church 5	Church 7	Borden 1	Sission 2	Lepes 1	RIDEM RDEC	RIDEM I/CDEC
Arsenic	***7.97***	2.13	2.34	3.46	1.61	3.05	3.10	1.46	3.96	7.0	7.0
Lead	***539***	15.7	22.0	21.0	10.7	8.91	ND	7.04	6.55	150	500

Concentration (ppm)	Lepes 3	Lepes 5	Lepes 7	Lepes 9	Lepes 11	Lepes 13	Lepes 15	Lepes 17	Lepes 19	RIDEM RDEC	RIDEM I/CDEC
Arsenic	3.53	3.08	2.28	3.48	2.16	1.71	2.14	2.24	1.71	7.0	7.0
Lead	7.63	9.41	6.34	10.3	7.88	10.1	8.85	9.68	9.91	150	500

Note: ppm = Parts per million.
Bold indicates an exceedance of the RIDEM RDEC.
Italics indicate an exceedance of the RIDEM I/CDEC.
ND = Not detected.

The only location in which soils below the roadway exceeded the applicable RIDEM criteria was Judson-12, where both arsenic and lead exceeded both the RIDEM RDEC and I/CDEC.

During the inspection of the soils, if any anomalous observations were noted, such as odor, a soil sample was submitted for PAH analysis by EPA Method 8270C. A total of 3 soil samples (Judson-15, Church-8, and Sission-1) were submitted for PAH analysis based on field observations. Odors were noted in each of these 3 soil samples, although screening results did not indicate the presence of contamination. These odors were not considered to indicate the levels of contamination detected in earlier site investigation activities. Soil samples were collected in clean 8-oz glass jars. The concentrations of detected analytes are summarized in the table below.

ROADWAY SOIL BORING PAH ANALYTICAL RESULTS
21 AND 24 NOVEMBER 2003

Analyte Detected (ppm)	Judson-15	Church-8	Sission-1	RIDEM RDEC	RIDEM I/CDEC
Benzo(a)anthracene	0.048	0.345	ND	0.9	7.8
Benzo(b)fluoranthene	0.100	ND	ND	0.9	7.8
Benzo(g,h,i)perylene	0.081	ND	ND	0.8	10,000
Benzo(k)fluoranthene	0.086	ND	ND	0.9	78
Chrysene	0.160	**1.040**	0.292	0.4	780
Fluoranthene	0.094	ND	ND	20	10,000
Indeno(1,2,3-cd)pyrene	0.066	ND	ND	0.9	7.8
Pyrene	0.134	1.200	0.178	13	10,000

Note: **Bold** indicates an exceedance of the RIDEM RDEC.
ND = Not detected.
ppm = Parts per million.

The only RIDEM exceedance from the roadway PAH samples was a chrysene level above the RDEC at Church-8. This soil is isolated from direct contact by approximately 4-in of asphalt. Complete Certificates of Analysis for the roadway soils are included as Appendix C.

5. REMEDIAL ALTERNATIVES

To address the contamination identified on Town of Tiverton-owned land, EA is proposing two remedial alternatives. Based on the results of the previously conducted Site Investigation and this Site Investigation Addendum, two remedial alternatives are presented for further consideration for the Town of Tiverton property in and around Bay Street:

1. Excavation and disposal of impacted soil

2. An Environmental Land Usage Restriction (ELUR). Further discussion is presented to better define the requirements and effectiveness of the proposed remedial alternatives.

The following criteria were incorporated into the evaluation of remedial alternatives for the site:

- Ability to prevent the exposure of residents and site workers to contaminated soil
- Ability to remediate soil to RIDEM RDEC standards
- Cost-effectiveness
- Time efficiency (schedule concerns related to the everyday use of the property as public roadways and the concentration of nearby residences).

Remedial Alternative No. 1: Removal Action

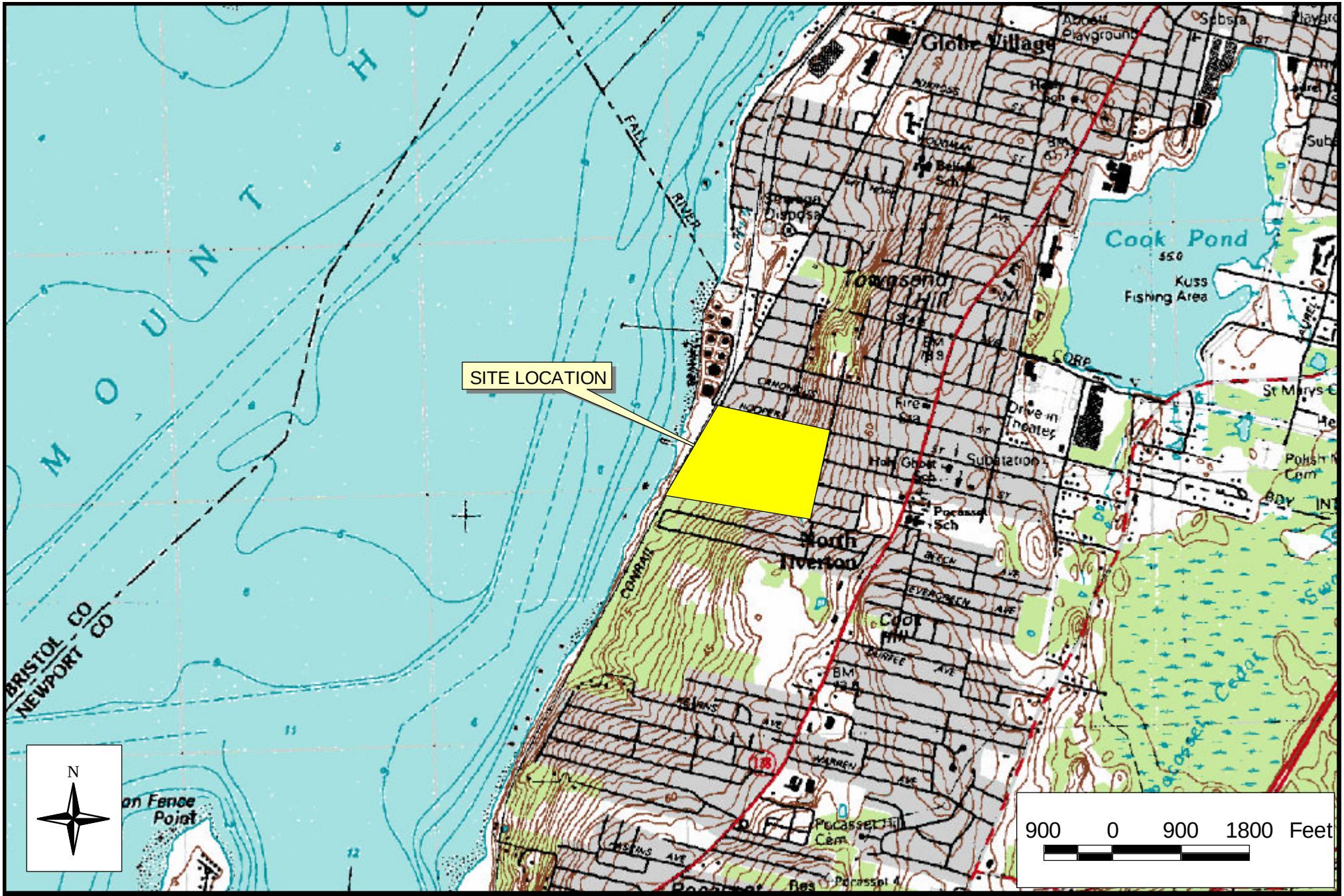
One alternative to address this contamination would be to establish clearly defined extents of contamination and initiate a removal action to excavate all soils contaminated above the applicable RIDEM direct exposure criteria. Soil would be screened and submitted to a certified analytical laboratory for confirmatory analysis to ensure that all contaminated material had been removed. This would eliminate all possibility of risk to residents or workers in the area. Following removal, soil would be transported to a licensed facility for disposal. The timeframe of this alternative would be the several months necessary to remove all of the contaminated material. However, this option would require no further action following the removal.

It is important to note that the contamination beneath the Town-owned roadways poses no risk to residents when the integrity of the paving is intact. This impermeable layer prevents risks of direct exposure to soils by site residents while also preventing the migration of this contamination by runoff, infiltration, or wind transport. Therefore, although the soil exceeds RIDEM direct exposure criteria for several analytes, the presence of 0.3–1.0 ft of asphalt over these soils has prevented the possibility of exposure. No residents in the immediate vicinity of or downgradient from this contaminated soil are served by private drinking water wells. All potable water to residents in the area is supplied by the Town of Tiverton. A removal action would, in fact, increase exposure to residents and workers to the material through working conditions and potential wind-borne contaminants.

Remedial Alternative No. 2: Environmental Land Usage Restriction

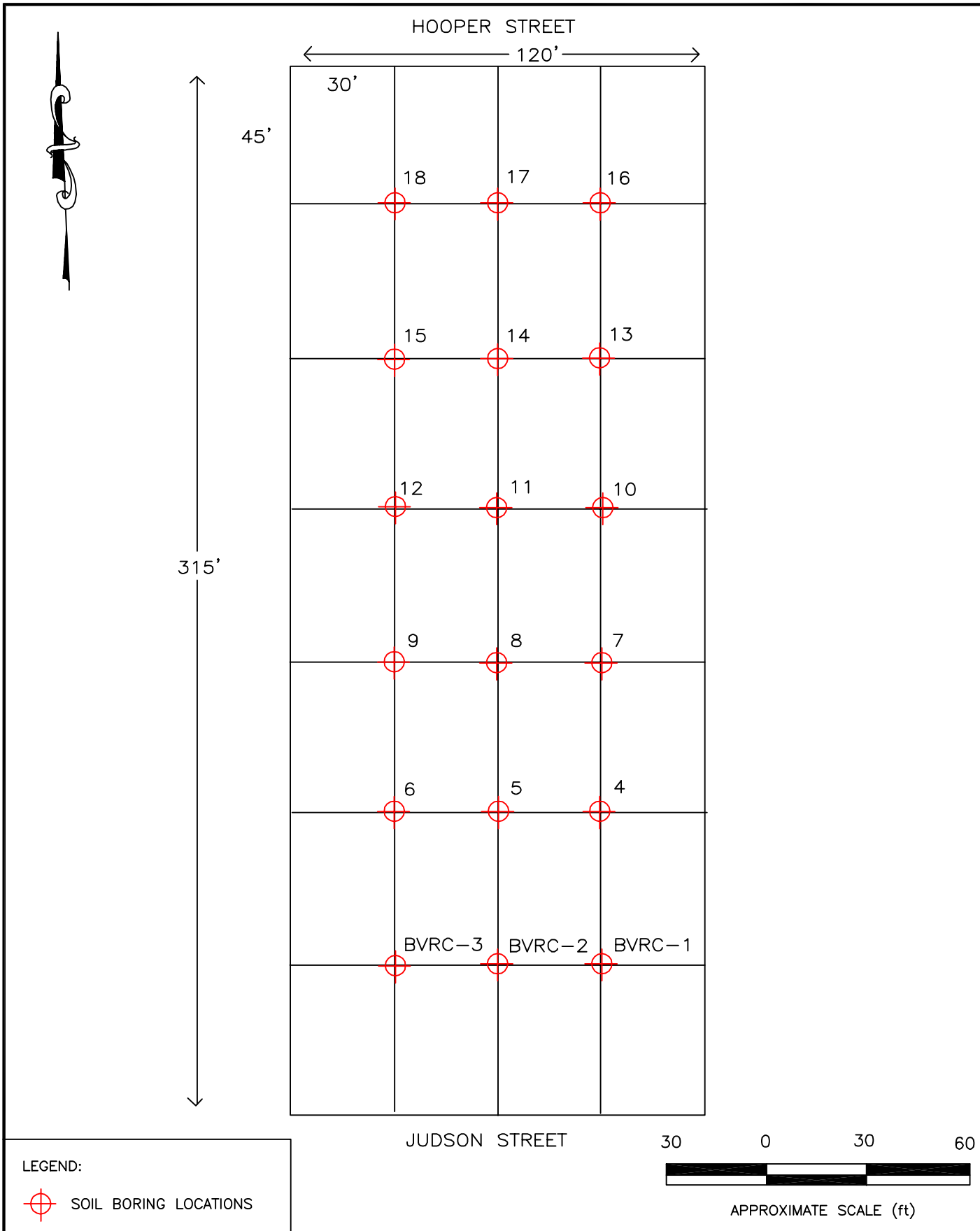
Another alternative to address the contamination found beneath the Town-owned roadways would be to establish an ELUR for the entire area between Judson Street and State Avenue, and between Bay Street and Bottom Street. This would involve establishing guidelines on any future intrusive activities within the range of contaminated material, such as those found in the attached Soil Management Plan (Appendix D). Such guidelines would include a requirement for air monitoring during excavations and the segregation of any contaminated soil from clean material in cases where the material cannot be used as backfill. Guidelines would also require replacement of the asphalt over the roadway that is acting as a cap to prevent exposure to the soil. This ELUR would be recorded in the land evidence records of the Town of Tiverton.

No decisions regarding the ultimate remedy will be made until the Southern Union-sponsored site investigations of privately-owned property has been completed.



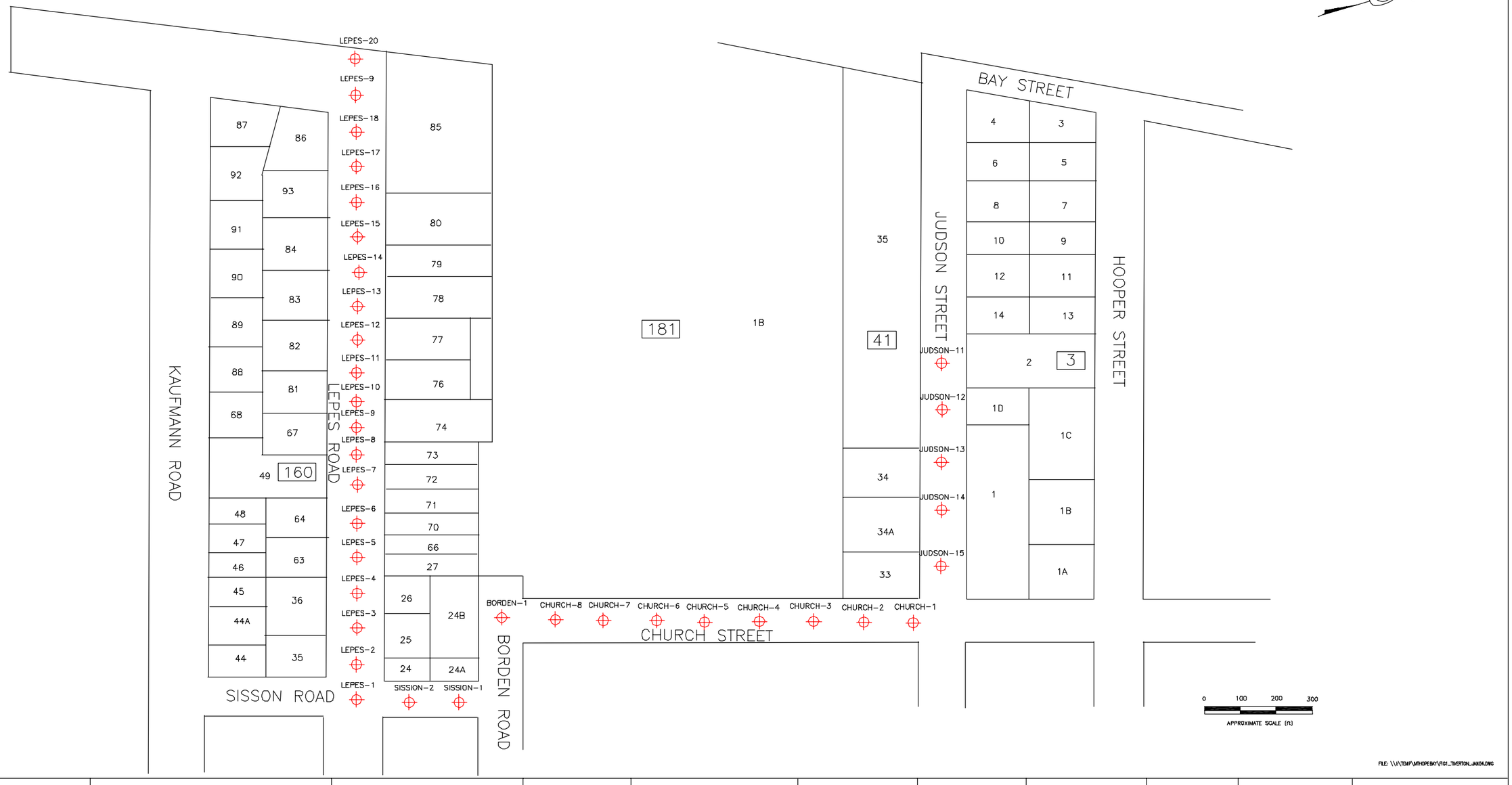
EA	TOWN OF TIVERTON SITE INVESTIGATION REPORT TIVERTON, RHODE ISLAND	FIGURE 1 SITE LOCATION MAP

PROJECT MGR	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	DATE	PROJECT NO.	FILE NO.
TR	DC	DC	JP	AS SHOWN	JAN 2004	1407001	I:\TIV.APR



EA ENGINEERING, SCIENCE, AND TECHNOLOGY	TOWN OF TIVERTON SITE INVESTIGATION REPORT BAY VIEW RECREATION CENTER TIVERTON, RHODE ISLAND	FIGURE 2 SOIL BORING LOCATIONS

PROJECT MGR:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
TR	DC	DC	JP	AS SHOWN	OCTOBER 2003	1401604	I:\TEMP\BAYVIEW FIG2_SB_BV.DWG



FILE: \\A\TEMP\MTHOPEBAY\FIG1_TIVERTON_JAN04.DWG

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	TOWN OF TIVERTON SITE INVESTIGATION REPORT	SITE PLAN AND SOIL BORING LOCATIONS	FIGURE 3	PROJECT MANAGER: TR	CREATED BY: DC	DESIGNED BY: DC	CHECKED BY: JP	SCALE: 1"=300'	DATE: JANUARY 2004	PROJECT NO: 1407001

Appendix A

Certificates of Analysis from the Bay View Recreation Area 25 November 2003

Appendix B

Roadway Soil Boring Logs

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Borden Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Borden-1**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	
Surface Conditions: asphalt		

Start Drilling Date/Times	Finish
11/21/03 1450	11/21/03 1500

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.8'	NA	Borden-1 (0.2-1.2')	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-2.8' Light brown fine SAND, little f-m Gravel, trace Brick. Moist, semi-cohesive, no odor.
					0.0	2		
						3		
AS	4/3.0	NA	NS	0.0	0.0	4		4-7' Light brown fine SAND, little f-m Gravel, trace Brick. Moist, semi-cohesive, no odor.
					0.0	5		
					0.0	6		
						7		
						8		Bottom of Boring 8'
						9		Borden-1 (1450) sampled for As/Pb
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-1**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1030		1045
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3	NA	Church-1 (0.4-1.5')	0.0	0.0	0		0-0.4' Asphalt
					0.0	1		0.4-1.5' Dark brown/black f-c SAND, trace coal. No odor.
						2		1.5-3.0' Red/brown m-c SAND, little fine Gravel. Moist, semi-cohesive, no odor.
						3		
AS	4/4	NA	NS	0.0	0.0	4		4.0-8.0' Gray.brown f-m SAND, some coarse Sand and fine Gravel.
					0.0	5		Moist, cohesive, no odor.
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		Church-1 (1045) sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-2**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1100		1115
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.4'	NA	NS	0.3	0.0	0		0-0.4' Asphalt
					0.0	1		0.4-1.3' Dark brown/black f-c SAND and fine Gravel, trace coal. Slight odor.
					0.0	2		1.3-3.4' Light brown m-c SAND, little f-m Gravel, rock dust. Moist, semi-cohesive, no odor.
						3		
AS	1/0.6	NA	NS	0.0		4		4.0-4.6' Rock and rock dust.
						5		Refusal at 5'.
						6		Bottom of boring 5'
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-3**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1120		1140
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.5'	NA	Church-3 (0.4-1.3')	0.0	0.0	0		0-0.3' Asphalt
					0.0	1		0.3-0.6' Black f-m SAND, little fine Gravel, trace coal. Dry, slight odor.
					0.0	2		0.6-2.2' Light brown f-c SAND, trace f-m Gravel, Brick, Concrete. No odor
						3		2.2-3.5' Moist balck f-m SAND, little f-m Gravel, trace Coal. Semi-cohesive, no odor.
AS	4.0/3.8	NA	NS	0.0	0.0	4		4.0-7.6' Light brown/red brown mottled fine SAND, trace medium Sand. Moist, semi-cohesive, no odor.
					0.0	5		7.6-7.8' Dark gray fine SAND, little Gravel, trace Silt. Wet, no odor.
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		Church-3 (1130) sampled for As/Pb
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Church Street Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Church-4**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/21/03 1155		11/21/03 1215

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.0'	NA	NS	0.0	0.0	0		0-0.4' Asphalt
					0.0	1		0.4-1.3' Dark brown/black f-c SAND and Gravel. Dry, no odor.
					0.0	2		1.3-3.0' Light brown f-m SAND. Moist, semi-cohesive, no odor.
						3		
AS	2.0/2.4	NA	NS	0.0	0.0	4		4.0-6.0' Gray/light brown f-c SAND and f-m Gravel. Dry, semi-cohesive, no odor.
					0.0	5		Refusal at 6'
						6		Bottom of boring 6'
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-5**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1315		1325
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs		USCS Log	SOIL DESCRIPTION
AS	4/2.9	NA	Church-5 (0.3-1.3')	0.0	0.0	0			0-0.3' Asphalt
					0.0	1			0.3-0.7' Dark brown to black f-c SAND, trace Gravel. Dry, loose, no odor.
						2			0.7-2.9' Light brown to red brown f-m SAND. Moist, semi-cohesive, no odor.
						3			Rock at 2.5' and 2.9'
AS	4/2.5	NA	NS	0.0	0.0	4			4.0-6.0' Gray/light brown f-c SAND and f-m Gravel. Dry, semi-cohesive, no odor.
					0.0	5			Refusal at 6.5'.
						6			
						7			Bottom of boring 6.5'
						8			
						9			Church-5 (1320) sampled for As/Pb
						10			
						11			
						12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-6**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1330		1345
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/4.0'	NA	NS	0.0	0.0	0		0-0.3' Asphalt
					0.0	1		0.3-1.5' Dark Brown f-c SAND, trace f-m Gravel, Ceramic, Brick. Dry, loose, no odor.
					0.0	2		1.5-4.0' Gray/brown f-c SAND, little f-m Gravel, trace Silt. Semi-cohesive, dry to moist.
					0.0	3		
AS	4/2.8	NA	NS	0.0	0.0	4		4.0 to 6.8' Gray/brown f-c SAND, little f-m Gravel, trace Silt. Semi-cohesive, dry to moist.
					0.0	5		
						6		
						7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-7**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	
Surface Conditions: asphalt		

Start	Drilling Date/Times	Finish
11/21/03 1330		11/21/03 1345

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.3'	NA	Church-7 (0.2-1.2')	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.7' Dark brown f-c SAND and Gravel. Dry and loose.
					0.0	2		0.7-3.3' Gray/light brown f-c SAND, little f-m Gravel. Moist, semi-cohesive, no odor.
						3		
						4		Refusal at 4'.
						5		Bottom of boring 4'
						6		Church-7 (1415) sampled for As/Pb
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Church Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Church-8**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1430		1440
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.3'	NA	Church-8 (0.2-1.2')	0.5	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.8' Dark brown/black f-c SAND, little fine Gravel. Dry, loose, strong odor.
					0.0	2		0.8-3.3' Gray/light brown f-c SAND, some f-m Gravel. Semi-cohesive, no odor.
						3		
AS	4/2.9	NA	NS	0.0	0.0	4		4-6.9' Gray/light brown f-c SAND, some f-m Gravel. Semi-cohesive, no odor.
					0.0	5		
						6		
						7		
						8		Bottom of boring 8'
						9		Church-8 (1430) sampled for PAH
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Judson Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Judson-11**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		0830		0845
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/1	NA	NS	0.0	0.0	0		0-0.4' Asphalt
								0.4-1.0' Light brown M-C SAND and Gravel. No odor.
						1		1.0-2.0' Stone (refusal)
						2		Bottom of boring 2'
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Judson Street Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Judson-12**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		0900		0920

Surface Conditions: asphalt

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.9	NA	Judson-12 (1-2')	0.0	0.0	0		0-0.4' Asphalt
					0.0	1		0.6-2.9' Light brown grading to red/brown f-c SAND with Gravel, coal pieces, glass, ceramic, metal, rust at bottom. Slight odor.
					0.0	2		
						3		
AS	2.5/2.5	NA	NS	0.0	0.0	4		4.0-6.5' Light brown f-m SAND, organics. Refusal at 6.5'.
					0.0	5		
						6		
						7		Bottom of boring 6.5'
						8		Judson-12 (0915) sampled for As/Pb
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Judson Street Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Judson-13**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/21/03 0930		11/21/03 0940

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/1.5	NA	NS	0.0	0.0	0		0-0.5' Asphalt
					0.0	1		0.5-0.8' Dark brown f-c SAND and Gravel. No odor.
						2		0.8-1.5' Rock and rock dust
						3		
						4		Refusal at 4'.
						5		Bottom of boring 4'
						6		
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Judson Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Judson-14**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		0950		1000

Surface Conditions: asphalt

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.5	NA	Judson-14 (0.7-1.7')	0.0	0.0	0		0-0.7' Asphalt
					0.0	1		0.7-2.3' Dark brown/black f-c SAND with Gravel, rock dust. No odor.
						2		
						3		
						4		Refusal at 4'.
						5		Bottom of boring 4'
						6		Judson-14 (1000) sampled for As/Pb
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Judson Street Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Judson-15**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1010		1020

Surface Conditions: asphalt

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	3/1.9	NA	Judson-15 (0.7-1.3')	0.0	0.0	0		0-0.7' Asphalt
					0.0	1		0.7-1.3' Dark brown f-c SAND and Gravel. Slight odor.
						2		1.3-1.9' Rock
						3		Refusal at 3'.
						4		Bottom of Boring 3'
						5		Judson-15 (1020) sampled for PAH
						6		
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-1**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		0825		0840
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.0'	NA	Lepes-1 (0.2-1.0')	0.2	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.5' Dark brown f-c SAND and Gravel. No odor.
					0.0	2		0.5-1.0' Light brown f-c SAND and Gravel. No odor.
						3		1.0-3.0' Brown fine SAND, some fine Gravel.
AS	4/3.5	NA	NS	0.0	0.0	4		4.0-7.5' Brown fine SAND, some fine Gravel.
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		Lepes-1 sampled for As/Pb
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-10**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1153		11/24/03 1201

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.8	NA	NS	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.5' Brown f-c SAND and Gravel
					0.0	2		0.5-2.6' Brown fine SAND, little Gravel
						3		2.6-2.8' Brown fine SAND, little Gravel
AS	4.0/0.0	NA	NS	NA		4		
						5		
						6		
						7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-11**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03		11/24/03
1211		1220

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.5	NA	Lepes-11 (0.1-1.0')	0.3	0.0	0		0-0.1' Asphalt
					0.0	1		0.1-0.4' Black f-c SAND and Gravel, trace Brick
					0.0	2		0.4-2.5' Brown f-m SAND, some Gravel
						3		
AS	4.0/3.3'	NA	NS	0.0	0.0	4		4-7.3' Brown f-m SAND, some Gravel with Rock Fragment layer at 7.0'
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-11 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-12**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1225		11/24/03 1245

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.8	NA	NS	0.3	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.4' Black f-c SAND and Gravel
					0.0	2		0.4-1.3' Brown f-m SAND, some Gravel
						3		1.3-2.8' Gray fine SAND, little Gravel
AS	4.0/2.9	NA	NS	0.0	0.0	4		4.0-6.9' Gray fine SAND, little Gravel
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-13**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1343		11/24/03 1354

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.6	NA	Lepes-13 (0.3-1.3')	0.2	0.0	0		0-0.3' Asphalt and Rock Fragments
					0.0	1		0.3-0.6' Gray f-m SAND and Gravel
					0.0	2		0.6-2.6' Gray fine SAND, little Gravel
						3		
AS	4.0/3.8'	NA	NS	0.0	0.0	4		4.0-7.8' Gray fine SAND, little Gravel
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-13 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-14**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1343		11/24/03 1354

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/3.2	NA	NS	0.0	0.0	0		0.0-0.1' Asphalt
					0.0	1		0.1-0.3' Dark brown f-c SAND and Gravel
					0.0	2		0.3-0.4' Rock Fragments
						3		0.4-2.6' Brown/gray fine SAND, little Gravel
AS	4.0/4.0'	NA	NS	0.0	0.0	4		4.0-8.0' Brown/gray fine SAND, little Gravel with layers of Rock Fragments
					0.0	5		
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-15**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1423		11/24/03 1432

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.5	NA	Lepes-15 (0.2-1.2')	0.0	0.0	0		0.0-0.2' Asphalt
					0.0	1		0.2-0.8' Dark brown f-c SAND and Gravel
					0.0	2		0.8-2.5' Gray brown fine SAND, little Gravel with Rock Layers
						3		
AS	4.0/2.2'	NA	NS	0.0	0.0	4		4.0-6.2' Gray brown fine SAND, little Gravel with Rock Layers
					0.0	5		
						6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-15 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-16**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1441		11/24/03 1451

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS PID (ppm) Above bk.	PID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/3.5	NA	NS	0.3	0.0	0		0.0-0.1' Asphalt
					0.0	1		0.1-0.3' Black/brown f-c SAND and Gravel
					0.0	2		0.3-3.5' Brown fine SAND, little Gravel, trace Brick in upper 0.5'
						3		
AS	4.0/4.0'	NA	NS	0.0	0.0	4		4.0-8.0 Brown fine SAND, little Gravel with layers of Rock Fragments
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method:	Boring No.
Geoprobe 5400	**Lepes-17**

Sampling Method:	Sheet 1 of 1
4-ft, 2" diameter dedicated acetate sleeves	

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		1501		1518

Surface Conditions: asphalt

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.9	NA	Lepes-17 (0.2-1.2')	0.3	0.0	0		0.0-0.2' Asphalt
					0.0	1		0.2-0.6' Black/brown f-c SAND and Gravel
					0.0	2		0.6-2.9' Brown/gray fine SAND, little Gravel
						3		
AS	4.0/2.8'	NA	NS	0.0	0.0	4		4.0-6.8 Brown/gray fine SAND, little Gravel
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-17 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-18**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1522		11/24/03 1534

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.5'	NA	NS	0.0	0.0	0		0.0-0.2' Asphalt
					0.0	1		0.2-0.5 Brown/black f-c SAND, some Gravel
					0.0	2		0.5-0.7' Rock Fragments
						3		0.7-2.5' Brown/gray fine SAND, little Gravel
AS	4.0/3.3'	NA	NS	0.0	0.0	4		4.0-7.3' Brown/gray fine SAND, little Gravel
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-19**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03		11/24/03
1542		1548

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.9'	NA	Lepes-19 (0.2-1.2')	0.0	0.0	0		0.0-0.2' Asphalt
					0.0	1		0.2-0.6' Black/brown coarse Gravel and SAND
					0.0	2		0.6-0.7' Gray crushed stone
						3		0.7-2.9' Gray/brown fine SAND, little Gravel
AS	1.0/1.0	NA	NS	0.0	0.0	4		4.0-5.0 Gray/brown fine SAND, little Gravel. Wet at 4.5'.
						5		Refusal at 5'
						6		Bottom of boring 5'
						7		Lepes-19 sampled for As/Pb
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-2**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		0848		0905
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.0'	NA	NS	0.0	0.0	0		0-0.1' Asphalt
					0.0	1		0.1-0.5' Dark brown/black f-c SAND and Gravel. No odor.
					0.0	2		0.5-0.7' Light brown f-c SAND and Gravel. No odor.
						3		0.7-1.3' Gray f-c GRAVEL, some Sand (stone dust)
								1.3-3.0' Brown fine SAND, some fine Gravel
AS	4/4.0	NA	NS	0.0	0.0	4		4.0-5.5' Brown fine SAND, some fine Gravel.
					0.0	5		5.5-8.0' Dark gray f-m SAND, little Gravel
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-20**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1554		11/24/03 1604

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/3.4'	NA	NS	0.0	0.0	0		0.0-0.1' Asphalt
					0.0	1		0.1-0.6' Black f-c SAND and Gravel
					0.0	2		0.6-3.4' Brown fine SAND, little Gravel
						3		
AS	4.0/3.7	NA	NS	0.0	0.0	4		4.0-7.7' Brown fine SAND, little Gravel. Layer of crushed rock from 4.8 to 5.2.
					0.0	5		
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-3**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 0951		11/24/03 1004

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.9'	NA	Lepes-3 (0.1-1.1')	0.0	0.0	0		0-0.1' Asphalt
					0.0	1		0.1-0.2' Dark brown f-c SAND and Gravel. No odor.
					0.0	2		0.2-0.4' Rock fragments.
						3		0.4-2.9 Brown fine SAND, some fine Gravel interspersed with Rock fragments.
AS	4/4.0	NA	NS	0.0	0.0	4		4.0-8.0' Brown fine SAND, some fine Gravel.
					0.0	5		
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		Lepes-3 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-4**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		1013		1022
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.4'	NA	NS	0.0	0.0	0		0-0.1' Asphalt
					0.0	1		0.1-1.0' Brown fine SAND, some Gravel
					0.0	2		1.0-3.4' Gray f/m SAND, little Gravel
					0.0	3		
AS	0.5/0.5	NA	NS	0.0		4		4.0-4.5' Gray f/m SAND, little Gravel
						5		Refusal on rock at 4.5'
						6		Bottom of boring 4.5'
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-5**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		1027		1035
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.5'	NA	Lepes-5 (0.1-1.1')	0.0	0.0	0		0-0.1' Asphalt
					0.0	1		0.1-0.3' Dark brown/black f-c SAND and Gravel
					0.0	2		0.3-2.7' Brown/orange fine SAND, little Gravel
					0.0	3		2.7-3.5 Gray fine SAND, little Gravel
AS	4/3.1'	NA	NS	0.0	0.0	4		4.0-7.1 Gray fine SAND, little Gravel, with occassional rock fragments
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-5 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-6**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1040		11/24/03 1050

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/3.5'	NA	NS	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-1.0' Brown fine SAND, some Gravel, trace Brick
					0.0	2		1.0-2.5' Brown fine SAND, little Gravel
					0.0	3		2.5-3.5' Rock fragments
AS	1.5/1.5	NA	NS	0.0	0.0	4		4.0-5.0' Brown fine SAND, little Gravel
						5		5.0-5.5' Rock Fragments
						6		Refusal on Rock at 5.5'.
						7		Bottom of boring 5.5'
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Lepes Road Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Lepes-7**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start	Drilling Date/Times	Finish
11/24/03 1055		11/24/03 1111

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.5	NA	Lepes-7 (0.2-1.2')	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.4' Black f-c SAND and Gravel.
					0.0	2		0.4-2.2 Gray fine SAND, some Gravel
						3		2.2-2.5' Rock Fragments
AS	3.0/3.0	NA	NS	0.0	0.0	4		4.0-6.5' Gray/brown fine SAND and Gravel.
					0.0	5		
					0.0	6		
						7		Refusal on rock at 7.0'
						8		Bottom of boring 7'
						9		Lepes-7 sampled for As/Pb
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-8**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	
Surface Conditions: asphalt		

Start	Drilling Date/Times	Finish
11/24/03 1115		11/24/03 1130

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/3.0'	NA	NS	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.3 Black f-c SAND and Gravel
					0.0	2		0.3-3.0 Gray fine SAND, some Gravel
						3		
AS	4.0/4.0	NA	NS	0.0	0.0	4		4.0-8.0' Gray fine SAND, some Gravel
					0.0	5		
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Lepes Road Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Lepes-9**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/24/03		11/24/03
Time	NA		1138		1148
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS FID (ppm) Above bk.	FID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4.0/2.0	NA	Lepes-9 (0.2-1.2')	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.5' Brown f-m SAND and Gravel
						2		0.5-2.0' Brown fine SAND, little Gravel
						3		
AS	4.0/3.0	NA	NS	0.0	0.0	4		4.0-7.0' Brown fine SAND, little Gravel, occassional Rock Fragments
					0.0	5		
					0.0	6		
						7		
						8		Bottom of boring 8'
						9		
						10		Lepes-9 sampled for As/Pb
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Laurie Gibeau Date: 11/24/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No.	Client:	Location:
14070.01	Town of Tiverton	**Sission Street Tiverton, RI**

Drilling Method: Geoprobe 5400

Boring No. **Sission-1**

Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves

Sheet 1 of 1

Drilling Water Level		
Date	NA	
Time	NA	

Surface Conditions: asphalt

Start Drilling Date/Times	Finish
11/21/03 1505	11/21/03 1520

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS PID (ppm) Above bk.	PID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.8'	NA	Sission-1 (0.3-0.6')	1.7	0.0	0		0-0.3' Asphalt
					0.0	1		0.3-0.6' Dark brown/black f-c SAND, trace fine Gravel, trace Coal. Dry, loose, strong odor.
					0.0	2		0.6-2.8' Gray/brown f-c SAND, some f-c Gravel, trace Brick. Moist, semi-cohesive, no odor.
						3		
AS	4/4.0	NA	NS	0.0	0.0	4		4.0-8.0' Gray/brown f-c SAND, some f-c Gravel, trace Brick. Moist, semi-cohesive, no odor.
					0.0	5		
					0.0	6		
					0.0	7		
						8		Bottom of boring 8'
						9		Sission-1 (1515) sampled for PAH
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

EA Engineering, Science, and Technology, Inc.

LOG OF SOIL BORING

Job. No. 14070.01	Client: Town of Tiverton	Location: **Sission Street Tiverton, RI**
Drilling Method: Geoprobe 5400		Boring No. **Sission-2**
Sampling Method: 4-ft, 2" diameter dedicated acetate sleeves		Sheet 1 of 1

Drilling Water Level			Start	Drilling Date/Times	Finish
Date	NA		11/21/03		11/21/03
Time	NA		1525		1545
Surface Conditions: asphalt					

Sample Type	Feet Driven/Ft Recvrd	Dpth Csg.	Samp # / depth (ft)	HS PID (ppm) Above bk.	PID per 1'	Ft bgs	USCS Log	SOIL DESCRIPTION
AS	4/2.8'	NA	Sission-2 (0.2-0.8')	0.0	0.0	0		0-0.2' Asphalt
					0.0	1		0.2-0.8' Dark brown/black f-c SAND, little f-m Gravel, trace Coal. Loose, dry, no odor.
					0.0	2		0.8-2.8' Brown fine SAND, some medium Sand, trace fine Gravel. Moist, semi-cohesive.
						3		
AS	4/2.6	NA	NS	0.0	0.0	4		4.0-6.0' Brown fine SAND, some medium Sand, trace fine Gravel. Moist, semi-cohesive.
					0.0	5		
					0.0	6		Refusal at 6.0'
						7		Bottom of boring 6'
						8		Sission-2 (1530) sampled for As/Pb
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		

Logged by: Jill Ann Parrett Date: 11/21/03

Drilling Contractor: New England Geotech Driller: Bill Meadows

NOTES: No well installed.

Appendix C

Certificates of Analysis from the Roadway Sampling 21 and 24 November 2003

Appendix D

Soil Management Plan

APPENDIX D

SOIL MANAGEMENT PLAN
Tiverton, Rhode Island

During trench excavation activities at the Mount Hope Bay Sewer Interceptor Project Site on Bay Street in August 2002, workers encountered soil contaminated with cyanide and semi-volatile organic compounds (SVOCs). This soil had an organic odor and open trenches exhibited a sheen on groundwater. This soil was separated from other excavated materials and has been removed from the site following RIDEM Emergency and ShortTerm Response Procedures. Subsequent site investigation activities revealed the presence of the polycyclic aromatic hydrocarbons (PAH) group of SVOCs, arsenic, lead, and cyanide in soils under public roadways around Bay Street, including Judson, Hooper, Canonicus, Hilton, A. Connell, Bottom, and Church Streets and State and Chace Avenues (east of Church Street).

Any excavation that may expose residents or workers to contaminated material will require a formal notification of all abutting residents at least 72 hours prior to the start of excavation. Persons conducting excavations in potentially contaminated areas must also submit notification to the Rhode Island Department of Environmental Management (RIDEM), including plans for the proposed work. These plans will contain a proposed soil sampling plan.

In the areas where contaminated soil is expected in the area on and around Bay Street, the soil will be screened using field equipment and visual/olfactory signals. Suitable material will be reused as backfill in the excavation. RIDEM has required that one foot of clean material be placed above the backfilled material prior to installing the final paved surface. In the event that excavation is necessary in unpaved areas, a minimum of two feet of clean material must be placed above the backfilled material. Unsuitable material will be segregated and stored properly to await the appropriate waste disposal alternative. Proper storage will consist of a polyethylene containment area with runoff control measures, such as hay bales. If laboratory analysis of soils is required for disposal purposes, results will be forwarded to RIDEM. All excavations must be properly secured during nonworking periods with safety markings, including snow fence, and a cover.

1.0 EXCAVATION

During any excavation through areas of soil contamination in the area of Bay Street, all actions will be conducted in compliance with the Site Safety, Health, and Emergency Response Plan (SHERP) prepared by EA. This environmental SHERP will be followed in conjunction with the plan used by the excavation subcontractor during normal excavation and installation activities. EA-recommended health and safety procedures include: conducting excavations downwind of work area, periodic air monitoring for toxic, combustible, and explosive gases, using combustion machinery upwind of work area, and appropriate personal protective equipment (PPE). All personnel conducting excavations must be properly trained, and oversight must be conducted by properly trained individuals to ensure the health and

safety of workers and the public. Temporary security fencing must be installed around all excavations prior to beginning the project and maintained throughout the project in order to prevent potential access by the public to contaminated materials.

2.0 SOIL SCREENING

During the excavation of suspect soils, the material will be screened using visual and olfactory methods. In the event that visual/olfactory methods are inconclusive, a photo-ionization detector (PID) will be used to screen soils utilizing the jar headspace method. Soils will be collected in clean, glass 8-ounce jars and covered with tin foil. The lid will be screwed on tightly and the jar will be shaken vigorously for at least 15 seconds. The temperature will be allowed to equilibrate for at least 15 minutes, then the lid will be unscrewed and the PID probe will be inserted through the tin foil.

Excavated materials meeting the definition of suitable fill based on visual/olfactory and Pill screening will be used as backfill for the pipeline according to the protocols established by the excavation subcontractor. According to RIDEM requirements, one foot of clean material must be used above backfill in areas that will be paved. Two feet of clean material must be used above backfill in unpaved areas.

As contact with contaminated soil is expected during this phase of excavation activities, only EA personnel will perform the soil screening and assist in the determination of suitability for use as backfill. Proper PPE will be worn in accordance with the SHERP.

3.0 SOIL STAGING AND SAMPLING

Polyethylene sheeting will be used to stage all unsuitable soils excavated during invasive activities. This method will serve to prevent infiltration of contamination to surface soils. These soil piles will be further isolated using hay bales to prevent contaminated runoff from spreading to the rest of the site. At the end of each workday, any soil stockpiles will be covered with polyethylene sheeting weighed down by sandbags. Waste characterization sampling will be completed at the frequency required by the ultimate disposal facility, with results forwarded to RIDEM. Soils will not be stored on site in excess of 60 days.

4.0 WASTE DISPOSAL

The loading and transport of any contaminated soils generated through the duration of the project should be conducted in accordance with the SHERP and under EA supervision. Care will be taken to ensure that the integrity of any soil piles is maintained to prevent the spread of contamination. If dust becomes a health and safety issue, water will be used as the method of dust suppression. Breathing zone monitoring will be done every 30 minutes to ensure worker safety. All copies of the bills of lading and waste manifests will be maintained by EA personnel and will be submitted to RIDEM. All loads will be covered in the transporting dump trucks en route to the ultimate disposal facility.